

# Claims

- [c1] at least one non-geostationary satellite generating a plurality of signals having integrity information; and a navigation receiver determining a range of said at least one non-geostationary satellite, a position of said at least one satellite, and an accuracy of at least one of said range and said position in response to said plurality of signals.
- [c2] A system as in claim 1 wherein said at least one satellite generates said plurality of signals comprising range and integrity information that is transmitted on a single frequency.
- [c3] A system as in claim 1 wherein said at least one non-geostationary satellite generates said plurality of signals over an L5 frequency.
- [c4] A system as in claim 1 wherein said at least one non-geostationary satellite generates said plurality of signals comprising a timing signal and a data signal.
- [c5] A system as in claim 1 wherein said at least one non-geostationary satellite generates a first signal and a second signal, said second signal having said integrity in-

formation.

- [c6] A system as in claim 5 wherein said at least one non-geostationary satellite generates said first signal comprising timing information and said second signal comprising timing and integrity information.
- [c7] A system as in claim 5 wherein said navigation receiver determines said range and said position in response to said first signal and said second signal.
- [c8] A system as in claim 5 wherein said at least one non-geostationary satellite generates and transmits said first signal and said second signal on L-band frequencies.
- [c9] A system as in claim 1 wherein said navigation receiver performs as an integrity-monitoring device.
- [c10] A system as in claim 1 wherein said navigation receiver monitors a plurality of satellites and in response thereto determines accuracy of said position.
- [c11] A system as in claim 1 wherein said at least one non-geostationary satellite generates said plurality of signals comprising integrity information that is related to health of the at least one non-geostationary satellite.
- [c12] A system as in claim 11 wherein said at least one non-geostationary satellite generates said plurality of signals

comprising integrity information that is indicative of accuracy of said range and said position.

- [c13] A system as in claim 1 wherein said navigation receiver determines accuracy of said position in response to said integrity information.
- [c14] A system as in claim 1 further comprising a control center generating an integrity signal, said at least one non-geostationary satellite determining said integrity information in response to said integrity signal.
- [c15] A system as in claim 1 further comprising a control center generating a reliability signal, said receiver determining reliability of said position in response to said reliability signal.
- [c16] A system as in claim 1 further comprising a control center generating a reliability signal, said receiver determining reliability of said range in response to said reliability signal.
- [c17] A system as in claim 1 further comprising a monitoring center monitoring said at least one non-geostationary satellite and generating a measured signal; and a control center generating an integrity signal in response to said measured signal.

[c18] A system as in claim 17 wherein said control center generates a reliability signal in response to said measured signal.

[c19] A system as in claim 18 wherein said at least one non-geostationary satellite adjusts said integrity information in response to said reliability signal.

[c20] A system as in claim 1 further comprising a control center having a first ground antenna and a second ground antenna, said first ground antenna transmitting a data signal and said second ground antenna transmitting a reliability signal.

[c21] A system as in claim 1 further comprising:  
a plurality of monitoring stations generating measured signals in response to said plurality of signals; and  
a central station in communication with said monitoring stations and generating integrity signals and reliability signals in response to said measured signals.

[c22] A navigation system comprising:  
at least one non-geostationary satellite generating a plurality of signals having integrity information; and  
a navigation receiver determining range of said at least one non-geostationary satellite, position of said at least one non-geostationary satellite, and reliability of at least

one of said range and said position in response to said plurality of signals.

[c23] A system as in claim 22 wherein said navigation receiver determines accuracy of said position in response to said plurality of signals.

[c24] A navigation receiver for a navigation system receiving a plurality of signals having integrity information from at least one non-geostationary satellite, said navigation receiver determining range of said at least one non-geostationary satellite, satellite position of said at least one non-geostationary satellite, and accuracy of at least one of said range and said position in response to said plurality of signals.

[c25] A receiver as in claim 24 wherein the navigation receiver performs as an integrity-monitoring device.

[c26] A receiver as in claim 24 wherein the navigation receiver determines accuracy of said satellite position in response to said integrity information.

[c27] A receiver as in claim 24 wherein the navigation receiver determines accuracy of said range in response to said integrity information.

[c28] A receiver as in claim 24 wherein the navigation receiver

determines position of said receiver in response to said plurality of signals.

[c29] A receiver as in claim 24 wherein said navigation receiver receives said plurality of signals over a single frequency.

[c30] A receiver as in claim 24 wherein the navigation receiver determines reliability of said satellite position.

[c31] A receiver as in claim 24 wherein the navigation receiver determines reliability of said range.

[c32] A receiver as in claim 24 wherein the navigation receiver determines reliability of said range and said satellite position and in response to said reliability determines timing and velocity of a vehicle associated with the navigation receiver.

[c33] A method of operating a navigation system comprising: generating a plurality of signals having integrity information from at least one non-geostationary satellite; and determining range of said at least one non-geostationary satellite, position of said at least one non-geostationary satellite, and accuracy of at least one of said range and said position in response to said plurality of signals.

[c34] A method as in claim 30 wherein said plurality of signals are generated over a single frequency.

[c35] A method as in claim 30 further comprising determining reliability of said range.

[c36] A method as in claim 30 further comprising determining reliability of said position.

[c37]